

AMENDMENT AND PRESENTATION OF CLAIMS

Please replace all prior claims in the present application with the following claims, in which Claims 3, 5 and 7-12 are canceled without prejudice or disclaimer, and Claim 1 is currently amended.

1. (Currently Amended) A method for forging a hollow rack bar from a blank pipe made of metal, comprising:

(a) subjecting the blank pipe to a plastic deformation process for an adjustment of an inner diameter and an outer diameter of the blank pipe along an entire periphery of the blank pipe;

(b) subjecting a predetermined outer part of the blank pipe to a flattening process to substantially flatten the predetermined outer part;

(c) holding said blank pipe after the plastic deformation process and the flattening process by a die having a toothed portion so that the toothed portion is contacted with the predetermined outer part of the blank pipe; and

(d) inserting, under a pressure, a mandrel into the blank pipe held by the die for causing the metal to be flown toward the toothed portion, thereby forming on the predetermined outer part of the blank pipe another toothed portion having a shape corresponding to a shape of the toothed portion of the die,

wherein the step (a) for subjecting the blank pipe to the plastic deformation process comprises

subjecting the blank pipe to a swaging process for reducing the outer diameter of the blank pipe, and

subjecting the swaged blank pipe to an ironing process for producing a desired cross-sectional shape of the blank pipe.

2. (Canceled)

3. (Canceled)

4. (Previously Presented) A method for forging a hollow rack bar from a blank pipe made of metal, the method comprising a pre-forming step and a main forming step after the execution of the pre-forming step, the pre-forming step comprising:

(a) subjecting the blank pipe to a swaging process for reducing an outer diameter of the blank pipe;

(b) clamping the swaged blank pipe by a clamping die of a desired shape at an outer periphery thereof, while locating a working core inside the blank pipe; and

(c) withdrawing the working core to expand the blank pipe in order to generate a desired shape of a hollow cavity of the blank pipe expanding in an axial direction and a radial direction;

said main forming step comprising:

(d) holding the pre-formed blank pipe from its outer side by a rack forming die having a toothed portion; and

(e) inserting a mandrel to the hollow cavity of the blank pipe, thereby forming on an outer surface of the blank pipe another toothed portion having a shape corresponding to a shape of the toothed portion of the rack forming die.

5-12. (Canceled)

13. (Previously Presented) A method according to claim 4, further comprising:

forming in a cavity of a recess of the clamping die at locations corresponding to locations of the blank pipe corresponding to the ends of rack portion of the product to be forged from the blank pipe; and

obtaining a flow of excessive material as generated during the swaging into said recess, thereby obtaining irregular cross section at said locations of the blank pipe.